

**REMARKS/ARGUMENTS**

**1.) The Claims**

Claims 1-14 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the following remarks.

**2.) Claim Rejections – 35 U.S.C. § 102(e)**

The Examiner rejected claims 1-14 under 35 U.S.C. § 102(e) as being anticipated by Mousley, et al. (US 2002/0049057) (“Mousley”). The Applicants believe that Mousley is distinguishable from the claimed invention.

As an initial matter, it is worthwhile to restate the alternatives disclosed by Mousley that purport to overcome the cited deficiencies with conventional solutions for timing references during soft handover, as described in paragraphs [0044] to [0054] thereof:

[0044] 1. Prevent the MS 110 from adjusting it uplink timing reference during soft handover. Since this reference cannot be offset by  $T_0$  from the downlink timing reference of all BSs 100, it is not necessary for it to be offset by this amount from any BS 100. Use of the reporting range should be sufficient to maintain a suitable relationship between uplink and downlink timing references.

[0045] 2. Define a limitation that the reporting range must be symmetric about the downlink timing reference. This enables the uplink timing reference to be offset from it by  $T_0 + \tau$  chips, where  $\tau$  is an additional offset which could be calculated from the actual spread of arrival times of received signals rather than being predetermined. Examples of possible definitions for  $\tau$  are:

[0046] (a) half the number of chips between the arrival of the first significant path from the first BS 100 in the active set and the arrival of the first significant path of the last BS 100 in the active set;

[0047] (b) half the number of chips between the arrival of the first significant path of the first BS 100 in the active set and the arrival of the last significant path of the last BS 100 in the active set;

[0048] (c) the mean number of chips between the arrival of the first significant path of the first BS 100 in the active set and the first significant paths of the all BSs 100 in the active set;

[0049] (d) the mean number of chips between the arrival of the first significant path of the first BS 100 in the active set and each of the significant paths of all BSs 100 in the active set;

[0050] (e) a weighted average of the number of chips between the arrival of the first significant path of the first BS 100 in the active set and the first significant paths of all BSs 100 in the active set; and

[0051] (f) a weighted average of the number of chips between the arrival of the first significant path of the first BS 100 in the active set and each of the significant paths of all BSs 100 in the active set.

[0052] Such a means of calculating the additional offset has the advantage of relating the uplink transmit timing to the signals actually received. If signals from all the BSs 100 in the active set were received very close together, or very widely dispersed, this approach would help to keep the receive timings centrally within the reporting range, thus achieving the goal of minimising the frequency of reporting BSs 100 for being outside the valid range.

[0053] 3. Set the transmit timing of the MS 110 so that the first significant paths received from each BS 100 (or all paths from all BSs 100) are received centrally within the reporting range, regardless of whether or not the reporting range is signalled to be symmetric with respect to  $T_0$ . This can be achieved by calculating the offset  $\tau$  as follows:  $1 = B_u + B_l/2 + DL_n - DL_1/2 - T_0$

[0054] where  $B_u$  is the upper threshold and  $B_l$  is the lower threshold of the reporting range, in chips before the uplink timing reference,  $DL_n$  is the reception time of the first significant path of the last BS 100 to be received and  $DL_1$  is the reception time of the first significant path of the first BS 100 to be received.

As can be seen, Mousley bases the timing of the "virtual cell" on an average or the spread of the cells in the active set. With respect to Claim 1, the Examiner refers to paragraph [0045] and states that "the uplink timing is defined with reference to the downlink transmission frame timing of a reference cell selected from said active set." However, it is noted above that  $\tau$  is calculated by different means but selecting only one cell is not one of them. It is based on the spread of the received radio links.

More significantly, in the present invention, the timing of the reference cell is initially not changed. The virtual cell is placed exactly where the former reference cell was placed, but the timing is defined as an offset relative to one or more cells in the active set. This is a specific limitation of claim 1 (i.e., "the timing of which is defined with reference to one or more of the cells remaining in the active set, such that the timing of the virtual reference cell corresponds to the timing of the previous reference cell"). This limitation advantageously minimizes the number of timing updates. That offset is not disclosed in Mousley. In Mousley, the virtual cell is placed at the first cell +  $\tau$ , dependent on the timing spread of the cells.

With respect to the rejection of claims 2 and 3, it is noted that these claims are dependent on claim 1 and Mousley fails to recite all of the limitations of claim 1. Further, the fixed timing of the present invention uses a real cell as the reference cell. As such, paragraph [0039] of Mousley is not relevant to claims 2 or 3 of the present invention.

In claim 4, the virtual reference cell timing is defined with reference to the active cell which first joined the active set. Such is not the case in Mousley (see paragraphs [0061], [0062], [0063] of Mousley). Further, claim 4 is dependent on claim 1, and Mousley fails to recite all of the limitations of claim 1.

With respect to claim 5, nothing contained paragraphs [0030] or [0031] of Mousley refer to using only one cell as the reference. Such paragraphs of Mousley are not relevant to transmitter timing. Further, claim 5 is dependent on claim 1, and Mousley fails to recite all of the limitations of claim 1.

With respect to claim 6, paragraphs [0030], [0031] of Mousley are not relevant to transmitter timing. Nothing contained in the cited paragraphs refer to using the strongest cell as the reference. Further, claim 5 is dependent on claim 1, and Mousley fails to recite all of the limitations of claim 1.

With respect to claim 7, Mousley does disclose using the average timing as one way of defining the virtual cell, however, claim 7 is dependent on claim 1, and Mousley fails to recite all of the limitations of claim 1.

With respect to claim 8, the Examiner refers to paragraph [0045] and states that "the uplink timing is defined with reference to the downlink transmission frame timing of a reference cell selected from said active set." However, it is noted above that  $\tau$  is calculated by different means but selecting only *one* cell is not one of them. It is based on the spread of the received radio links. More significantly, in the present invention, the timing of the reference cell is initially not changed. The virtual cell is placed exactly where the former reference cell was placed, but the timing is defined as an offset relative to one or more cells in the active set. This is a specific limitation of claim 8 (i.e., "the timing of which is defined with reference to one or more of the cells remaining in the active set, such that the timing of the virtual reference cell corresponds to the timing of the previous reference cell"). This limitation advantageously minimizes the number of timing updates. That offset is not disclosed in Mousley. In Mousley, the virtual cell is placed at the first cell +  $\tau$ , dependent on the timing spread of the cells.

With respect to the rejection of claims 9 and 10, it is noted that these claims are dependent on claim 8 and Mousley fails to recite all of the limitations of claim 8. Further, the fixed timing of the present invention uses a real cell as the reference cell. As such, paragraph [0039] of Mousley is not relevant to claims 9 or 10 of the present invention.

With respect to claim 11, the virtual reference cell timing is defined with reference to the active cell which first joined the active set. Such is not the case in Mousley (see paragraphs [0061], [0062], [0063] of Mousley). Further, claim 11 is dependent on claim 8, and Mousley fails to recite all of the limitations of claim 8.

With respect to Claim 12, paragraphs [0030], [0031] of Mousley are not relevant to transmitter timing. Nothing contained in the cited paragraphs refer to using only one cell as the reference. Further, Claim 12 is dependent on claim 8, and Mousley fails to recite all of the limitations of claim 8.

With respect to Claim 13, paragraphs [0030], [0031] of Mousley are not relevant to transmitter timing. Nothing contained in the cited paragraphs refer to using the strongest cell as the reference. Further, Claim 13 is dependent on claim 8, and Mousley fails to recite all of the limitations of claim 8.

With respect to Claim 14, Mousley does disclose using the average timing as one way of defining the virtual cell, however, Claim 14 is dependent on claim 8, and Mousley fails to recite all of the limitations of claim 8.

Therefore, the allowance of claims 1-14 is respectfully requested.

**3.) Prior Art Not Relied Upon**

In paragraph 3 of the Office Action, the Examiner stated that the prior art made of record and not relied upon is considered pertinent to the Applicants' disclosure. None of the cited references alone, or in combination, disclose or suggest the present invention.

**CONCLUSION**

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 1-14.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,

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